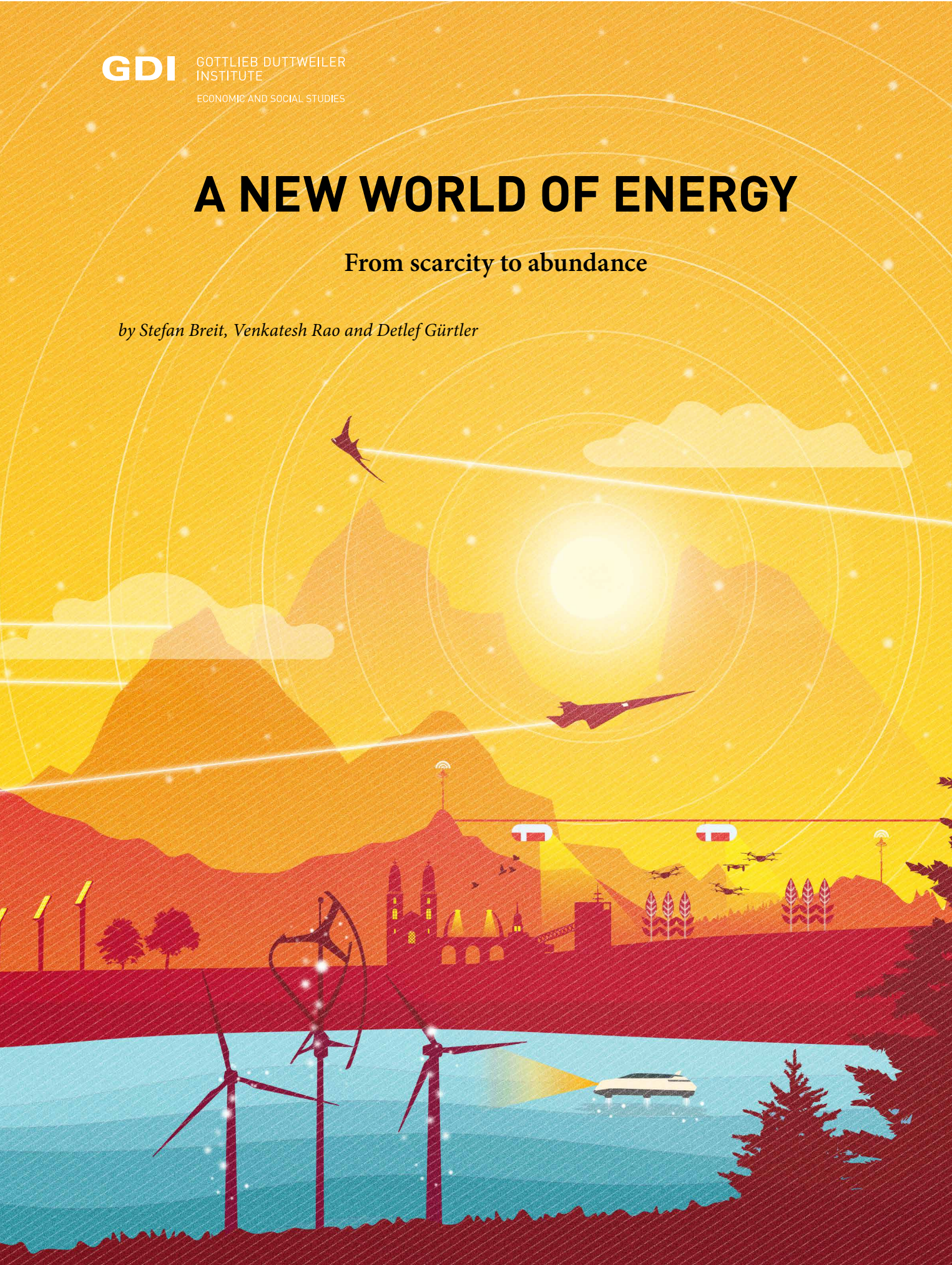


A NEW WORLD OF ENERGY

From scarcity to abundance

by Stefan Breit, Venkatesh Rao and Detlef Görtler



Imprint

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Preface

“The future always comes too fast and in the wrong order.” US futurologist Alvin Toffler’s sober assessment probably speaks to many energy companies at the moment. They are being confronted with fundamental changes to markets and technologies whose consequences can already be felt today and will lead to an entirely new energy landscape.

These changes will not wait for us, and they will not conform to any legally stipulated order or logic. New technologies and business models will emerge simultaneously or one after another, complementing or excluding each other, proving themselves against the competition or disappearing again. The future of energy cannot be sorted. But it can be steered.

For this to succeed, however, we need to actively engage with the future, anticipate potential technological leaps, seize opportunities and ward off risks early – or be paralysed by them. Our main goal is still to guarantee a secure, affordable and environmentally friendly energy supply for everyone.

We want to shape the new world of energy, not wait for it to shape us. Our generation has the privilege of participating in this task.

Benoît Revaz

Director, Swiss Federal Office of Energy

Summary

Over the course of the 21st century, the global energy system will transform from a system of scarcity to one of abundance. Not only will sufficient energy be available whenever and wherever it is needed, it will also come entirely from non-fossil sources. The old industrial world of oil will be succeeded by the new digital world of electricity.

A combination of forces will make this possible: technological progress, of course, but also economical, ecological and political developments. This fundamental transformation of the energy system also entails a fundamental transformation of global society. It will culminate in a post-carbon society that enjoys an abundance of energy, based on radically different social, political, economical and cultural parameters.

We cannot predict the exact shape of this brave new world of energy. No crystal ball will tell us. Negotiation of its complexities will be up to the transitional society living between today's scarcity and the abundance of the future. Just as the energy system progresses along a string of transitional technologies, a transitional society will also establish itself. It will experience, advance and ultimately facilitate the metamorphosis.

This will not happen from one day to the next, nor will it be smooth or subtle. It will involve steps, jumps and breaks that will affect everyone involved. Each development will be a shift, changing the way in which we produce and consume energy. Management of this energy system will take more than determination and control of the conditions in which it will operate. It will require preparation for potential errors and a planned response to positive and negative events. This study collected 30 of today's most important developments in terms of

social, technological, economical, ecological and political change in a "trend landscape", and analysed how they could shape the energy system of tomorrow.

State institutions will play a leading role in our transition to an energy-abundant society. Why? First, states become more important in an electrified world: they control power grids almost everywhere. Second, investment in a society of abundance will prioritise economic benefit over economic gain. Finally, our development to an overly affluent society will occur mainly through crises and upheaval. The state is usually our go-to helper in such situations. Technical disruptions, social revolutions, environmental catastrophes: every shift in the energy industry, whether caused by man or nature, is an opportunity for action. It is a chance to future-proof our energy system.

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